Dialogic® BorderNet™ 4000 Session Border Controller

High-Performance Security and Session Management for Dialogic® ControlSwitch™ System Networks

The Dialogic® BorderNet™ 4000 Session Border Controller (SBC) is a compact, high-performance security and session management platform that can be used seamlessly with the Dialogic® ControlSwitch™ System. The BorderNet 4000 SBC integrates into the ControlSwitch System architecture to provide comprehensive session security and control, signaling and media interworking functions at the network border to enable operators to offer high-quality services.

The powerful security and SIP interworking tools built into the BorderNet 4000 SBC can help lower service delivery costs and reduce the time required to interconnect diverse IP endpoints into a ControlSwitch System VoIP network.

The BorderNet 4000 SBC is part of the BorderNet™ family of session border controllers from Dialogic that help service providers and enterprises energize their networks and services with a better way to interconnect and deliver services through ease-of-use and low total cost of ownership (TCO).

Features	Benefits
Seamless operational integration with the ControlSwitch System platform	Reduce operational complexity and cost
Feature rich scalability up to 32,000 simultaneous sessions at 600 sessions per second and up to 256,000 access subscribers	More performance, more features in a smaller footprint can lower OPEX and CAPEX requirements
Peering and access features, including media transcoding	Increase ARPU through support for the delivery of business and residential services
Powerful and easy-to-use SIP header manipulation tools and profile-based provisioning	Accelerate service deployment and automate and simplify complex tasks associated with provisioning and interconnection for a lower TCO
Web 2.0 real-time dashboard and reporting	Improve operational efficiency through real-time visibility into service and system performance

NETWORK FUEL™

Seamless Integration with the ControlSwitch™ System Platform

Incorporating a standalone SBC with the ControlSwitch System can require service providers to develop and use complex administrative processes to manage their network. The BorderNet 4000 SBC eliminates much of this complexity through seamless integration into the ControlSwitch System platform. Service providers can deploy new SIP trunk groups on the ControlSwitch System without having to perform additional provisioning on the BorderNet 4000 SBC, which can greatly simplify ongoing management of peering connections. BorderNet 4000 SBC operations and management features can facilitate integration with the ControlSwitch System using the ControlSwitch's Element Management System (EMS), enabling the following capabilities:

• Flow-through provisioning of SIP trunk groups

• Single ControlSwitch System Call Detail Record (CDR) for all sessions

• Integration with the ControlSwitch System's alarming and reporting

• Integration with the ControlSwitch System's platform session tracing tools

• Single-sign on to both the ControlSwitch's EMS and BorderNet 4000 SBC's WebUI

• Active monitoring of the ControlSwitch System's core services and dynamic rerouting to back ControlSwitch System resources

• Border (P-CSCF, I-SBC) and PSTN (MGCF, BGCF, MRF) interworking services for IMS networks

Feature Rich, High Performance SBC Solution

The BorderNet 4000 SBC has "five-nines" availability and 4Gbps of throughput and can scale up to 32,000 simultaneous sessions at a rate of 600 sessions per second on a "carrier grade" 1 RU platform. It incorporates patent pending technology from Dialogic and combines high performance and advanced features as part of the overall solution, resulting in significant CAPEX savings opportunities. These features include media handling, load balancing on both inbound and outbound sessions with peering networks, emergency call handling, IMS and SIP-to-H.323 interworking functionality, advanced security features, and a configurable range of back-to-back user agent (B2BUA) levels.

Advanced Security Features

SBCs provide a first line of defense against fraud and malicious attacks in service provider networks. The BorderNet 4000 SBC helps protect network integrity and service quality from being compromised by providing a set of layered security capabilities that include the following:

• Customizable signaling and media topology hiding

• Built-in firewall capabilities

• Dynamic access control lists and automated rate limiting to protect against DoS attacks

• Real-time inspection of message syntax and semantics

• Protection against malformed messages

• Encryption, including TLS, IPsec, SRTP and HTTPS

• Media-related security including pin-hole management, Rogue RTP detection and bandwidth control

• Adaptive overload controls for assuring the delivery of high priority traffic

Real-time Dashboard, User Management and Reporting Capabilities

The BorderNet 4000 SBC's WebUI includes a real-time management dashboard that provides ready access to analytics like traffic statistics, platform status, and a comprehensive set of platform and traffic reports to help manage the performance of the SBC and its peering connections. The BorderNet 4000 SBC WebUI provides role-based user administration to secure and control access to various system views involving configuration and provisioning of the SBC. The configuration and provisioning tasks related to the BorderNet 4000 SBC are performed through the highly intuitive WebUI interface.

In addition to OAM&P functions, the Web UI of Dialogic's BorderNet 4000 SBC also provides feature-rich analytics and reporting. Alarms are also displayed along with security statistics that can provide insight on the performance of peering partners through inbound and outbound metrics like Answer-Seizure Ratio (ASR) for SIP and H.323 peers. The analytics available from the WebUI include traffic statistics, usage summary, and a comprehensive set of performance and traffic reports to help manage network and service activity. Additional tools are included in the WebUI to make license management, data archive, historical reporting, regulatory compliance and network troubleshooting easier and more streamlined.

Powerful and Easy-to-Use Management, Interworking and Configuration Tools for Low TCO

Service providers need to securely connect their networks with other operators to deliver services to their customers; however, not all SIP implementations are the same. Dialogic has developed the SIP Profiler for its BorderNet family of SBCs – including the BorderNet 4000 - to help reduce the complexity of this process. The SIP Profiler is a powerful configuration tool that can reduce the time and effort to implement interconnection in multi-vendor, multi-application environments across networks with different SIP behaviors.

The SIP Profiler can be used to define behavior at the ingress and egress ports of the BorderNet 4000 SBC and enable customized routing to help optimize and control SIP message flows. The SIP Profiler is accessed through the BorderNet 4000 SBC's WebUI, or through the use of XML scripts. Types of operations that can be performed using the SIP Profiler include:

- Add, modify or delete SIP headers, SIP bodies and SDP parameters and adaptively impact message sequence and flows
- Store information from header fields for later access
- Inspect SIP messages for specific content
- Use customized response codes when, for example, rejecting messages

A Media Profiler extends the core features of the powerful SIP Profiler framework to the SDP, media attributes, and the codecs used in the bearer plane. The Media Profiler provides the ability to:

- Control and reorder the offer codec list
- Control media attributes
- Manage and manipulate contents of ISUP, QSIG and other non-SDP message bodies

The BorderNet 4000 SBC WebUI simplifies operational tasks associated with configuring and maintaining the integrity of a peering environment. The profile-based provisioning capabilities through the BorderNet 4000 SBC WebUI allows users to define service, session, and media profiles that describe the behavior of a connected endpoint. With profile-based provisioning, a user can configure a new peering endpoint with a set of already-defined security, session, and media parameters with ease, thereby reducing not only the time to provision an interconnection, but also the system knowledge required. These powerful interworking and configuration features help lessen TCO by reducing management complexity and accelerating service delivery.

The BorderNet 4000 SBC includes both IP level and session level tracing, media capture and recording. It also includes SOAP/XML and bulk loading of interface configurations along with a northbound API for integration with existing BSS/OSS applications. System software upgrading can be easily accomplished through the WebUI, with the ability to roll back upgrades if needed.

Increasing ARPU through the Delivery of Business and Residential Services

The BorderNet 4000 SBC supports features that help service providers looking to rapidly deliver revenue generating IP-based business and residential voice services including hosted PBX, hosted contact center applications and unified communications. The BorderNet 4000 SBC supports capabilities such as SIP registration pass through, SIP trunking and PBX interworking, Far-end NAT traversal, and policy-based routing and resource control to help service providers reliably deliver VoIP services.

The BorderNet 4000 SBC is compliant with SIP Connect 1.1 for SIP trunking applications. SIPconnect compliance helps service providers, value added resellers and enterprise organizations in reducing the time required by integration, testing and turn-up and also allows services to be rolled out quickly and efficiently. In addition, media transcoding configurations are also available to support any-to-any connectivity of voice- and video-based services. The BorderNet 4000 SBC has also been validated by BroadSoft for interoperability with its BroadWorks suite of VoIP application services that integrate video, fax, voice and email communications for businesses and consumer customers.

Technical Specifications

Protocol Interworking

Signaling:	SIP, SIP-I, SIP-T,H.323
Other:	VLAN, IPv4, UDP, TCP, RTP, RTCP
Network:	IPv4, IPv6, Overlapped IP networks
3GPP:	Mx, Mx, Gm, Ic Interfaces

Security Features

Access Control List

Signaled pinhole media firewall

Network topology hiding for both signaling and media

Encryption support:	TLS, IPsec, HTTPS, SSH, SRTP pass-through

NAT traversal

DoS and overload protection

Rate Limiting

Dynamic Black Listing

Media Security Features

Media profiling

Rogue RTP detection

Packet rate monitoring and limiting

Dynamic bandwidth limiting

Bandwidth determination and enforcement

Session Admission Control

License control

Peer and Interface session rate limits

Auto black listing

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System Networks

IMS, IPX and VoLTE

Proxy Call Session Control Function (P-CSCF)

Inteconnect Border Control Function (I-BCF)

Transition Gateway (TrGW)

Integrated Border Function (I-SBC)

Interworking Function (IWF)

SIP and SIP-I/SIP-T Interworking

Routing

Signaling:	Static Routing: Interface-Interface and Peer/Interface
	SIP Invite/3xx SIP redirect server routing
	Integration with other routing engines through SOAP and bulk routing
	Policy-based routing
	SIP Message-based routing
	Local DNS for URI to IP Address and Port mapping
	Routing resolution thru external DNS (SRV, A, NAPTR)
	Load-balancing and priority-based routing
	RFC 4904 Trunk Group Routing support
	Multi-tenant routing table support
	Emergency services call routing and call prioritization
	SIP URN routing
	Dynamic SIP REFER processing
Media:	Optional media termination
	Separation of signaling and media over VLANs
	Media NAT traversal
	Media tromboning

QoS

QoS metrics:	Packets lost, jitter inter-arrival, and latency
Policy enforcement:	DSCP marking, ToS marking
Traffic statistics:	Total packets and octets transferred

Media Interworking

Transcoding support for the following codecs:

Audio:	G.711, G.722, G.723.1, G.726, G.729a, G.729b, AMR-NB, AMR-WB*, GSM-FR, GSM-EFR, iLBC
Video:	H.263, H.264, MPEG4
Fax:	G.711 fax, T.38
Tones:	G.711 tones, SIP INFO, RFC 2833

NOTE: Dialogic offers transcoding services on the BorderNet 4000 SBC either as integrated software based transcoding that is supported without the need for additional DSP resources or through a combination of the BorderNet 4000 SBC and the Dialogic® BorderNet™ 2020 SBC for large density requirements.

* Using the AMR-WB resource in connection with one or more Dialogic products mentioned herein does not grant the right to practice the AMR-WB standard. To seek a patent license agreement to practice the standard, contact the application patent holder(s).

Scalability

Maximum Session Attempts Capacity:	600 sessions per second signaling and media
Maximum INVITE sessions:	32,000
Access:	Up to 256,000 subscribers at 1,600 registrations per second; 3,610 refreshes per second
VLANS:	1,024
IP Addresses:	2,048 (signaling and media)
SIP interfaces:	500
VLAN bridging:	Up to 1,024 802.1q VLANs
Transcoding:	• Native software transcoding: Up to 1,000 session • Combination with the BorderNet 2020: Up to 7,750 sessions

Management

Integrated web-based management (https) and real-time dashboard and analytics

SNMP traps

Historical and real-time statistics and reports

Business and engineering reports including report filtering and multi-format data export

Session Detail Records

Role based User Management

Integrated Wireshark packet and session tracing

Northbound API interface based on web technology (SOAP/XML)

Bulk provisioning interface

Dialogic® ControlSwitch™ System Integration

• Integrated configuration and provisioning
• Integrated alarms and reporting
• Unified Call Detailed Record (CDR)
• End-to-end session tracing
• EMS platform manages both BorderNet 4000 SBC and the ControlSwitch System

Interfaces

Signaling and Media:	4 redundant (1+1) Gigabit Ethernet (10/100/1000 Base-T copper or MM optical)
Management:	1 redundant Gigabit Ethernet (10/100/1000 Base-T)
High Availability:	1 redundant Gigabit Ethernet (1000 Base-T)

Power

Power Supplies:	Dual hot swappable AC or DC power supplies Each power supply 650W maximum
AC Power Option:	Auto ranging 100-240 VAC +/- 10% with power factor correction Frequency: 50Hz – 60Hz Current: 2A – 4.8A RMS
DC Power Option:	Voltage Input Range: -40 to -60 VDC Nominal: -48 VDC Current: 6A to 12A

Environment

Operating temperature range:	41°F to 122°F (5°C to 50°C)
Storage temperature range:	-4°F to 149°F (-20°C to 65°C)
Relative humidity:	Up to 90% humidity, non-condensing
Heat dissipation (max):	400W (1364 BTU/Hour)

Physical

Dimensions:	*Width* 19 in (482.6 mm) x *Depth* 20.75 in (527.1 mm) x *Height* 1.74 in (44.2 mm)
Weight:	26.8 lbs (12.2 kg)

Environmental Standards

EMC/EMI	USA/Canada: FCC 47 CFR Part 15, Class A Digital Device ICES-003 Issue 4 - Feb 2004, Class A
	European Union: EN 55022: 2006 + A1:2007, Class A Limit Immunity, EN 55024: 1998 +A1:2001, +A2:2003 and EN 300 386 V1.4.1 (2008)
Safety	USA/Canada: UL/CSA 60950-1 - 2nd Edition (2007)
	European Union: EN 60950-1: 2006 + All: 2009

Approvals, Compliance, and Warranty

Hazardous substances	RoHS compliance information at www.dialogic.com/rohs
Country-specific approvals	Contact your local Dialogic sales representative
Warranty	Contact your local Dialogic sales representative

For More Information

For more information about the product(s) discussed in this datasheet, contact your local Dialogic representative. Worldwide contact information is available online at www.dialogic.com/contact.

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